Alacritech® Accelerator Hardware Installation Guide (Copper)

Preface

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This document describes the hardware installation of copper-based (RJ45) Accelerators from Alacritech, Inc. This document is the official reference source for all revisions/releases of these products until rescinded by an update.

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Organization of This Guide

This guide covers the installation for Alacritech® Accelerators with copper-based (RJ45) connectors and contains the following sections:

Chapter 1 - Introduction, provides a general introduction to Alacritech Accelerators and the SLIC Technology® on which they are based.

Chapter 2 - Hardware Installation, includes the specifications for the hardware and the procedure required to install the hardware component.

Chapter 3 – Software Installation and Support, provides information on installing the software and receiving technical support.

Appendix A – Hardware Warranty and Information, provides the text of the Limited Lifetime Hardware Warranty for the hardware component. This section also includes instructions for returning a defective product, the text of the Limitation of Liability and Remedies statement, and Compliance and Conformity statements.

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1 Introduction

1.1 About this Guide

This guide describes how to install Alacritech® Accelerators in standard PCI and PCI-X based servers. The following products are covered by this document:

1000 Series:

- 1000x1 Server and Storage Accelerator
- SES1001T iSCSI Accelerator

2000 Series:

- SEN2002XT Accelerator
- SEN2001XT Accelerator
- SEN2102ET Accelerator
- SEN2104ET Accelerator
- SES2002XT iSCSI Accelerator
- SES2001XT iSCSI Accelerator
- SES2102ET iSCSI Accelerator
- SES2104ET iSCSI Accelerator

1.2 Description

Alacritech 1000 and 2000 Series Accelerators are Gigabit Ethernet network interface cards that employ Alacritech's patented SLIC Technology architecture, a Dynamic TCP Offload™ methodology,

which uses an innovative application-specific integrated circuit (ASIC) for protocol processing.

Products using SLIC Technology architecture increase server performance and efficiency in a number of ways:

- Protocol processing is offloaded onto the Accelerator, freeing the CPU for application processing and maximizing throughput.
- The Alacritech Internet Protocol Processor (IPP) programmable ASIC, optimized for protocol processing, delivers faster performance than general-purpose CPUs.

The SLIC Technology architecture eliminates the burden of protocol processing on the host CPU. By offloading protocol processing, Alacritech Accelerators free the system for application processing, boosting server and storage system performance.

1.3 Specifications

	1000 Series Accelerators	2000 Series PCI-X Based Accelerators	2000 Series PCIe Based Accelerators
Port Speeds	IEEE Auto Negotiation: 10/100/1000 or 20/200/2000 with full duplex	IEEE Auto Negotiation: 10/100/1000 or 20/200/2000 with full duplex	IEEE Auto Negotiation: 10/100/1000 or 20/200/2000 with full duplex
Connectors	RJ-45	RJ-45	RJ-45
Media	1000BaseT: Category 5 cable; 100BaseTX: Category 5 cable; 10BaseT: Category 3, 4, or 5 cable	1000BaseT: Category 5 cable; 100BaseTX: Category 5 cable; 10BaseT: Category 3, 4, or 5 cable	1000BaseT: Category 5 cable; 100BaseTX: Category 5 cable; 10BaseT: Category 3, 4, or 5 cable
Bus Type	64-bit bus master PCI v2.2, Universal Card Low profile enabled	133 MHz/64-bit bus master PCI-X 1.0a Universal Card Compatible with 32-bit PCI 2.2 Low profile enabled	x4 PCI Express 1.0a
Reliability	MTBF 250,000 hours	MTBF 250,000 hours	MTBF 250,000 hours
Power	1.5A @ 3.3V typical	3A @3.3V typical	2102ET: 1.5A @3.3V; 1.0A @12V 2104ET: 2.0A @3.3V; 1.5A @12V
Safety	UL, UL/c, IEC60950	UL, UL/c, IEC60950	UL, UL/c, IEC60950
Environmental Factors	Operating temperature: 0 to 55º C	Operating temperature: 0 to 55º C	Operating temperature: 0 to 55º C (Minimum Airflow: 150 LFM)

	Relative humidity: 5% to 85% non-condensing	Relative humidity: 5% to 85%, non-condensing	Relative humidity: 5% to 85%, non-condensing
EMC Standards Compliance	ANSI/IEEE 802.3, 2000 Edition Ethernet. (1000BaseT, 100BaseTX, 10BaseT) FCC, CE, VCCI	ANSI/IEEE 802.3, 2000 Edition Ethernet. (1000BaseT, 100BaseTX, 10BaseT) FCC, CE, VCCI	ANSI/IEEE 802.3, 2000 Edition Ethernet. (1000BaseT, 100BaseTX, 10BaseT) FCC, CE, VCCI
Diagnostic LEDs	Link speed (10,100,1000), network activity and 3.3V detect	Link speed (10,100,1000) and Link/network activity	Link speed (10,100,1000) and Link/network activity

1.4 Accelerator Diagrams

Figure 1 contains a diagram of the LED locations and port of the 1000x1 and SES1001T Accelerator. LEDs show link, activity, and speed on the end bracket.

The LED on the top of the card shows that the card is being supplied with 3.3V power. The card will not operate unless this LED is lit.

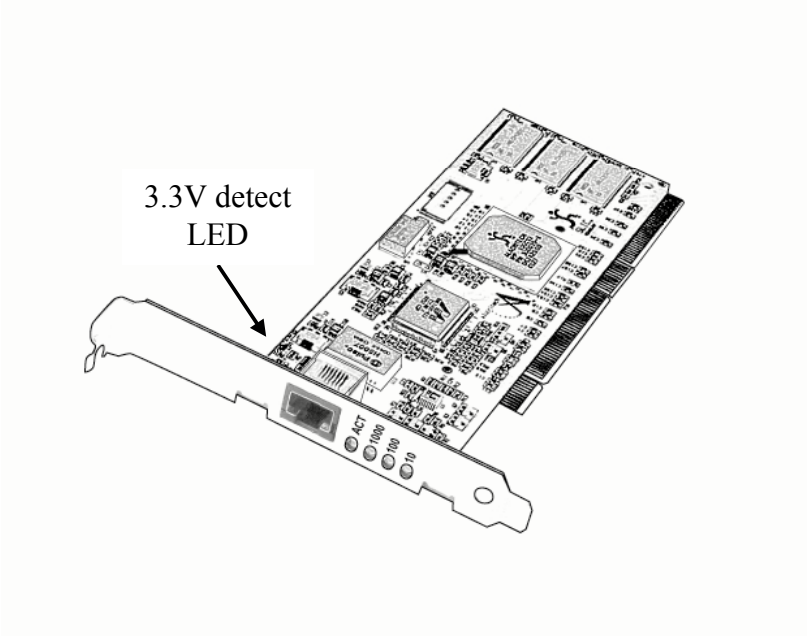

Figure 1: 1000x1 and SES1001T Accelerators

Figure 2 shows 2000 Series PCI-X based Accelerators. LEDs show link status, activity and speed on the end bracket:

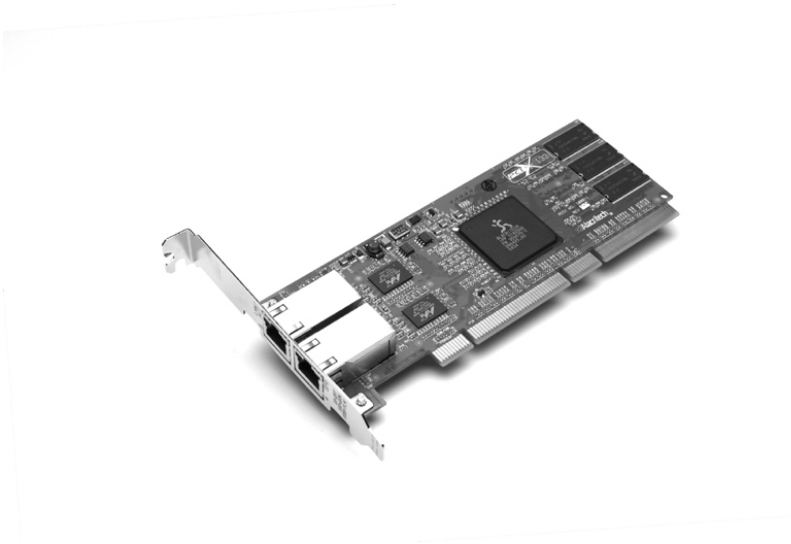

Figure 2: 2000 Series PCI-X Based Accelerators

Figure 3 shows 2000 Series PCIe based Accelerators. LEDs show link status, activity and speed on the end bracket:

Figure 3: 2000 Series PCIe Based Accelerators

2 Hardware Installation

2.1 Hardware Installation Overview

Alacritech Accelerators are designed for servers and storage systems on a Gigabit Ethernet network using TCP/IP. The system they are installed in must have the following features:

- Supported operating system (see readme on CD for latest OS support)
- One available bus-mastering PCI or PCI-X slot with 3.3 volt power supplied, or PCIe slot for PCIe based Accelerators
- CD-ROM or compatible drive or network CD drive for software installation

The network should have the following features:

- 1000Base-T Gigabit Ethernet or 100Base-TX Fast Ethernet using Category 5 cable with RJ-45 connectors; 10Base-T Ethernet using Category 3, 4, or 5 cables

2.2 Installing the Low Profile Bracket (PCI and PCI-X Accelerators Only)

The Accelerator includes a low profile bracket to facilitate installation in a low profile slot. To install an Accelerator in a low profile PCI slot, the bracket on the rear of the card will need to be changed with the included low profile bracket.

1. Remove the two 4-40 x 3/16 screws on the bottom side of the card.
2. Install the low profile PCI bracket, making sure that the mounting tabs are on the bottom side of the card and the screws secured from the component (top) side.

To convert an Accelerator from low profile to standard PCI, the bracket on the rear of the card will need to be changed to the original bracket.

1. Remove the two 4-40 x 3/16 screws from the topside of the card.
2. Install the standard PCI bracket, making sure that the mounting tabs are on the top (component) side of the card and the screws secured from the bottom side.

2.3 Hardware Installation

Note: Alacritech Accelerators use components that are sensitive to ESD. Proper ESD handling and storage should be followed.

Note: 1000 and 2000 Series PCI and PCI-X based Accelerators are compatible with 32-bit and 64-bit PCI 2.2 slots or PCI 2.1 slots supplied with 3.3 volt power. When a 1000 series Accelerator is installed in a slot with the proper 3.3 volt supply, the LED on the top of the card adjacent to the mounting bracket will illuminate.

1. Turn off and unplug the computer. Failure to do so could endanger you, and may damage the accelerator or computer.
2. Remove the computer cover, and install the Accelerator in any available bus-mastering PCI or PCI-X slot. Use a 64-bit, 66 MHz PCI slot or 64-bit, 66/100/133MHz PCI-X slot to maximize system performance. Figure 4 shows a typical 64-bit, PCI or PCI-X slot, however, the documentation for your system and motherboard should be consulted to verify available PCI slots. Some PCI slots have fasteners, which must be secured in order for the accelerator to function correctly.
3. Replace the computer cover, turn on and boot the computer.

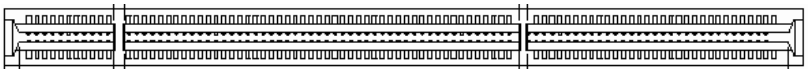

Figure 4: Typical 3.3V keyed 64-bit PCI or PCI-X bus slot

3 Software Installation and Support

3.1 Alacritech Automated Customer Support

You can reach Alacritech's automated support service 24 hours a day, every day. The service contains the most up-to-date information about Alacritech products. You can access the most current drivers, installation instructions, troubleshooting information, and general product information.

Support: http://www.alacritech.com/html/techsupport.html

Corporate: http://www.alacritech.com

3.2 Readme Files on Your Product CD-ROM

For a range of product information available, please read the readme.html file on the Alacritech Driver Installation CD. To view the files, go to the Alacritech Driver Installation CD and open the file with any web browser.

3.3 Installing the Accelerator Software

For information about installing driver software, open the **Users Guide.pdf** file in the **doc** directory on the Alacritech Driver Installation CD. The PDF files can be read using Acrobat® Reader software available from Adobe Systems Incorporated at http://www.adobe.com.

Appendix A Hardware Warranty and Information

LIMITED LIFETIME HARDWARE WARRANTY

Alacritech warrants to the original owner that the hardware product delivered in this package will be free from defects in material and workmanship. This warranty does not cover of the product if it is damaged in the process of being installed or improperly used.

THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF NON-INFRINGEMENT OF INTELLECTUAL PROPERTY, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE ARISING OUT OF ANY PROPOSAL, SPECIFICATION, OR SAMPLE.

This warranty does not cover replacement of accelerator products damaged by abuse, accident, misuse, neglect, normal wear and tear, alteration, repair, disaster, improper installation, or improper testing. If the accelerator product is found to be defective, Alacritech, at its option, will replace or repair the hardware product at no charge except as set forth below provided that you deliver the accelerator product along with a Return Material Authorization (RMA) number (see below), along with proof of purchase, either to the dealer from whom you purchased it or to Alacritech with an explanation of any deficiency.

With the same RMA procedure, at your option, Alacritech will refund your purchase price if the product is found to be defective and is returned within three months of the purchase date.

If you ship the accelerator product, you must assume the risk of damage or loss in transit. You must use the original container and pay the shipping charge.

Alacritech may replace or repair the accelerator product with either new or reconditioned parts, and any accelerator product, or part thereof replaced by Alacritech becomes Alacritech's property. Repaired or replaced accelerator products will be returned to you at the same revision level as received or higher, at Alacritech's option. Alacritech reserves the right to replace discontinued accelerator products with an equivalent current generation accelerator product.

Returning a Defective Product

Before returning any accelerator product, contact Alacritech Customer Support and obtain a Return Material Authorization (RMA) number by using the automated support service at http://www.alacritech.com/html/techsupport.html.

If the Customer Support Group verifies that the accelerator product is defective, they will have the RMA department issue you an RMA number to place on the outer package of the accelerator product. Alacritech cannot accept any product without an RMA number on the package.

Limitation of Liability and Remedies

ALACRITECH'S SOLE LIABILITY HEREUNDER SHALL BE LIMITED TO DIRECT, OBJECTIVELY MEASURABLE DAMAGES. IN NO EVENT SHALL ALACRITECH HAVE ANY LIABILITY FOR ANY INDIRECT OR SPECULATIVE DAMAGES (INCLUDING, WITHOUT LIMITING THE FOREGOING, CONSEQUENTIAL, INCIDENTAL, AND SPECIAL DAMAGES) INCLUDING, BUT NOT LIMITED TO, INFRINGEMENT OF INTELLECTUAL PROPERTY, REPROCUREMENT COSTS, LOSS OF USE, BUSINESS INTERRUPTIONS, LOSS OF GOODWILL, AND LOSS OF PROFITS, WHETHER ANY SUCH DAMAGES ARISE OUT OF CONTRACT NEGLIGENCE, TORT, OR UNDER ANY WARRANTY, IRRESPECTIVE OF WHETHER ALACRITECH HAS ADVANCE NOTICE OF THE POSSIBILITY OF ANY SUCH DAMAGES. NOTWITHSTANDING THE FOREGOING, ALACRITECH'S TOTAL LIABILITY FOR ALL CLAIMS UNDER THIS AGREEMENT SHALL NOT EXCEED THE PRICE PAID FOR THE PRODUCT. THESE LIMITATIONS ON POTENTIAL LIABILITIES WERE AN ESSENTIAL ELEMENT IN SETTING THE PRODUCT PRICE. ALACRITECH NEITHER ASSUMES NOR AUTHORIZES ANYONE TO ASSUME FOR IT ANY OTHER LIABILITIES.

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CRITICAL CONTROL APPLICATIONS: Alacritech specifically disclaims liability for use of the accelerator product in critical control applications (including, for example only, safety or health care control systems, nuclear energy control systems, or air or ground traffic control

systems) by Licensee or Sublicensees, and such use is entirely at the user's risk. Licensee agrees to defend, indemnify, and hold Alacritech harmless from and against any and all claims arising out of use of the accelerator product in such applications by Licensee or Sublicensees.

SOFTWARE: Software provided with the accelerator product is not covered under the hardware warranty described above. See the applicable software license agreement that shipped with the accelerator product for details on any software warranty.

FCC COMPLIANCE STATEMENT

We, Alacritech Inc., at

234 E. Gish Road
San Jose, CA 95112
(408) 287-9997
declare under our sole responsibility that the product(s):
Alacritech SLIC P/N's 100000, 100001, 100004, 100005, 100007, 100009, SEN1001T, SEN1001F, SES1001T, SES1001F, SEA1001T, SEA1001F, SEN2002XT, SEN2002XF, SEN2001XT, SEN2001XF, SES2002XT, SES2002XF, SES2001XT, SES2001XF, SEA2002XT, SEA2002XF, SEA2001XT, SEA2001XF, SEN2104ET, SEN2104EF, SEN2102ET, SEN2102EF, SES2104ET, SES2104EF, SES2102ET, SES2102EF.
Comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Note: This equipment has been tested and found to comply with the limits for a Class B digital device. The device must however be listed as a Class A device because the support equipment used during the testing of the product did not have an FCC DoC. As such, the following FCC statement applies:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The user may find the following booklet prepared by the Federal Communications Commission helpful:

The Interference Handbook

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-00345-4.

NOTE: In order to maintain compliance with the limits of a Class B digital device, Alacritech requires that you use network cables of a specific

quality when connecting this device. For 100BASE-TX operation, your network cables must be Category 5, twisted pair wiring. For 10BASE-T operation, use Category 3, 4 or 5 twisted-pair wiring. If you use this adapter in a residential environment, you must use Category 5 cables.

Changes or modifications not expressly approved by Alacritech could void the user's authority to operate this equipment.

VCCI Declaration of Conformity

The 100000, 100001, 100004, 100005, 100007, 100009, SEN1001T, SEN1001F, SES1001T, SES1001F, SEA1001T, SEA1001F, SEN2002XT, SEN2002XF, SEN2001XT, SEN2001XF, SES2002XT, SES2002XF, SES2001XT, SES2001XF, SEA2002XT, SEA2002XF, SEA2001XT, SEA2001XF, SEN2104ET, SEN2104EF, SEN2102ET, SEN2102EF, SES2104ET, SES2104EF, SES2102ET and SES2102EF are Class B products based on the standard of the Voluntary Control Council For Interference by Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

EN Declaration of Conformity

The 100000, 100001, 100004, 100005, 100007, 100009, SEN1001T, SEN1001F, SES1001T, SES1001F, SEA1001T, SEA1001F, SEN2002XT, SEN2002XF, SEN2001XT, SEN2001XF, SES2002XT, SES2002XF, SES2001XT, SES2001XF, SEA2002XT, SEA2002XF, SEA2001XT, SEA2001XF, SEN2104ET, SEN2104EF, SEN2102ET, SEN2102EF, SES2104ET, SES2104EF, SES2102ET and SES2102EF have been tested in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN55022 Class B (CISPR 22), EN55024, and EN60950.

Compliance to class B may be dependent upon the use of shielded data cables depending upon the host hardware.